GTAC
GOGEBIC TACONITE

May 9, 2013

Wisconsin Department of Natural Resources
WDNR Wausau Service Center
Attn: Mr. Brad Johnson
5301 Rib Mountain Road
Wausau, WI 54401

Dear Mr. Johnson:

Re: Stormwater Permit Application
Ferrous Mining Exploration Activity

Gogebic Taconite, LLC submits to your agency a Stormwater Permit Application for a Metallic Mine Exploration project. The project consists of drilling thirteen (13) coreholes from existing roads. Each site will be returned to its previous use as a road with not increase in road disturbances.

It should be noted that the drilling activity will not impact wetlands or historic sites since all activity will occur on previously disturbed roads.

Included, you will find the following completed forms and documents:

- Application Fee in the amount of $235.00
- Water Resources Application for Project Permits – Form 3500-053
- Attachment – Construction Erosion and Sediment Control
- Attachment – Post Construction Storm Water Management

Any questions should be directed to our Hurley office at (715) 561-2601. Our mailing address is:

Gogebic Taconite, LLC
402 Silver Street
Hurley, WI 54534

Sincerely,

Timothy J Myers
Manager Engineering

State of Wisconsin
Department of Natural Resources
dnr.wi.gov

Water Resources Application for Project Permits

Form 3500-053 (R 08/09) Page 1

Use this form for (check all that apply):

- ☐ Work in public waters (DNR – ch. 30, Wis. Stats.)
- ☐ Work in waters of the U.S (Corps of Engineers)
- ☐ Permit for Wetland Fill (DNR or Corps of Engineers)
- ☒ Storm water NOI – New land disturbing construction activity
  - ☐ Storm water NOI – Renewal FIN #
- ☐ Dam projects (DNR or Corps of Engineers)

Read all instructions provided before completing. If additional space is needed, attach additional pages.

Notice: This form is used to apply for coverage under the state construction site storm water runoff general permit, and to apply for a state or federal permit or certification for waterway and wetland projects or dam projects. This application form is authorized by chs 30 and 31, Wis. Stats, for Alterations to Public Waterways, ch. 281, Wis. Stats, for Wetland Fill and s. 283.33, Wis. Stats., for Storm Water Discharges. Personally identifiable information on this form may be used for other program purposes and may be made available to requestors under Wisconsin's Public Records laws and be posted on the Department website. This form and any required attachments constitute the permit application. Failure to complete and submit this application form may result in a fine and/or imprisonment or forfeiture under the provisions of applicable laws.

Section 1: Applicant Information

Applicant Name (Indiv., Org. or Entity)	Authorized Representative	Title	
Gogebic Taconite, LLC	**Timothy J Myers**	**Manager - Engineering**	
Mailing Address	City	State	Postal Code
402 Silver Street	**Hurley**	**WI**	**54534**
E-mail address	Telephone Number (include area code)	Fax Number (include area code)	
tmyers@gogebictaconite.com	**715 561-2601**	**715 561-2604**	

Section 2: Landowner Information (if different than Applicant)

Name (Organization or Entity)	Contact Person	Title	
SEE ATTACHMENT TO SECTION 2			
Mailing Address	City	State	Postal Code
E-mail address	Telephone Number (include area code)	Fax Number (include area code)	

Section 3: Other Contact Information (check one):

☐ Consultant or Plan Preparer ☐ Contractor ☐ Agent ☐ Other — If Other, specify:

Name (Organization or Entity)	Contact Person	Title	
NOT APPLICABLE			
Mailing Address	City	State	Postal Code
E-mail address	Telephone Number (include area code)	Fax Number (include area code)	

Section 4: Project or Site Location

Site Name (if any)	County	Municipality
GTac Exploration No. 1	**Ashland & Iron**	
Location Address/Description		☐ City ☐ Village ☐ Township
SEE ATTACHMENT TO SECTION 4		

Section 5: Location Information

Create a map depicting the perimeter of the construction site (land disturbance) and relationship to nearby water resources using the Surface Water Data Viewer http://dnr.wi.gov/org/water/data_viewer.htm or a 7.5-minute series topographic map. You can print the map and then draw the location on the map.

Provide the section, range, township information and if available, the Latitude and Longitude information.

PLSS (Public Land Survey System) **Method**

Quarter-Quarter		Quarter		Section	Township	Range	Direction	If this site is not wholly contained on the quarter-quarter section, more description:
☐ NW	☐ NE	☐ NW	☐ NE		N		☐ E ☐ W	
☐ SW	☐ SE	☐ SW	☐ SE					

Applicant/Project Name: **GTac Exploration No. 1** | County: **Ashland & Iron**

Latitude and Longitude Method (if available)

	Degrees	Minutes	Seconds	Method of Determining
Latitude				☐ GPS ☐ DNR's Surface Water Data Viewer ☐ Other (specify):
Longitude				

Section 6: Waterways and Wetlands (see Instructions about potential additional application requirements)

Name (description if unnamed) of closest waterbodies	Type	Special status
SEE ATTACHMENT TO SECTION 6	☐ Lake ☐ Stream	☐ ORW/ERW ☐ 303(d) listed

Yes No Wetlands:

☐ ☒ Wetlands will be filled, excavated, or disturbed during construction or as part of this project.

The presence of wetlands has been evaluated using: (check all that apply)

☒ Wisconsin Wetlands Inventory ☐ Wetland Delineation (attach report)

☐ Wetland Locator Tool http://dnr.wi.gov/wetlands/locating.html ☐ Soils (NRCS maps) ☒ Other (specify)All disturbances located on existing roads

Section 7: Project Information (Attach additional sheets as necessary)

Duration:	Anticipated Project Start Date (month/day/year)	Projected Project End Date (month/year)
	June 1, 2013	May 31, 2014

Photos: Provide photographs of the "before" condition. Date of Photographs: March 2011

Narrative of the Project:

Provide a one to two paragraph description of the proposed project, including land and water alterations and intended use(s) of the project.

SEE ATTACHMENT TO SECTION 7

Section 8: Attachments and Permit Access (Include appropriate attachments for each proposed activity.)

The following attachments, together with this form, constitute this permit application: (include all that apply)

Attachment Name(s)

☒ I have obtained a copy of the construction site storm water runoff general permit from the department's Internet site. http://dnr.wi.gov/runoff/pdf/stormwater/permits/construction/construction_permit_S067831-3.pdf

Section 9: Certification & Permission

Certification: I hereby certify that I am the owner or authorized representative of the owner of the property which is the subject of this Permit Application. I certify that the information contained in this form and attachments is true and accurate. I understand that failure to comply with any or all of the provisions of the permit may result in permit revocation and a fine and/or imprisonment or forfeiture under the provisions of applicable laws.

Permission: I hereby give the Department permission to enter and inspect the property at reasonable times, to evaluate this notice and application, and to determine compliance with any resulting permit coverage.

Name of Owner/Authorized Representative (Print or Type)	Title	Telephone Number
Timothy J Myers	**Manager-Engineering**	**715 561-2601**

Signature: Timothy J Myers Date Signed: 5/9/2013

LEAVE BLANK - AGENCY USE ONLY

Date Received	Fee Received $	Construction Site ID#	Docket #	Corps #

Initial screening:
☐ Completeness ☐ Historic checked ☐ Rare species (NHI) checked ☐ Wetlands checked

Section 2 – Form 3500-053
Attachment for Landowner Information

In reference to NR216.002(15) Wis Adm Code: Landowner is defined as "any person holding fee title, an easement or other interest in the property that allows the person to undertake land disturbing construction activity on the property."

Gogebic Taconite, LLC has entered into separate Options to Lease with the Surface Property Owners for the project. These Option Agreements authorize Gogebic Taconite, LLC to apply for permits and licenses necessary to evaluate the mineral reserve.

The Surface Property Owners for the project are:

RGGS Land & Minerals, Ltd., L.P.
PO Box 1266
Virginia, MN 55792
Phone: (218) 749-1291
Fax: (218) 749-1294
Contact Person: Terry Vilas, Land Agent
Email address: tvilas@rggs.us

LaPointe Iron Company
Congdon Mineral Management, Inc.
3920 13th Avenue East, Suite 7
Hibbing, MN 55746
Phone: (218) 262-0799
Contact Person: David Meineke
Email address: david.meineke@globalmineralseng.com

Section 4 – Form 3500-053
Attachment for Project or Site Location

The Site Name is GTac Exploration No. 1.

The Site Location is in both Ashland County and Iron County.

The project location in Ashland County is contained within Morse Township, Township 44 North, Range 2 West in parts of Sections 1 and 2.

The location in Iron County is contained within Anderson Township, Township 44 North, Range 1 West in parts of Sections 5 and 6 and contained within Anderson Township, Township 45 North, Range 1 West in parts of Sections 31, 32 and 33.

Section 6 – Form 3500-053
Attachment for Waterways and Wetlands

Name (Description if unnamed) of closest waterbodies:

Tyler's Fork River	Stream	ORW/ERW
Javorsky Creek of the Tylers Fork River	Stream	ORW/ERW
Dunn Creek of the Tylers Fork River	Stream	ORW/ERW
Devils Creek of the Bad River	Stream	ORW/ERW
Ballou Creek of the Bad River	Stream	ORW/ERW

No wetlands will be filled, excavated or disturbed during construction or part of this project.

The presence of wetlands has been evaluated using:

Wisconsin Wetlands Inventory
Other – Maintaining activity to existing roads

NOTE: See Site Map for project location in relation to streams and wetlands.

Section 7 – Form 3500-053
Attachment for Project Information

Narrative of the Project

OVERVIEW

This Mineral Exploration Project will consist of the drilling of 13 coreholes. The coreholes will be drilled with a hollow steel rod which is 2.36 inches in diameter. A small portable rig will be used for the drilling.

The project will use existing access roads and from previous mining and logging activity. The mining and logging activity dates back to the 1880's and as has been as recent as 2012.

SITING

The project site is located in Ashland and Iron Counties of Wisconsin. The project area has been commercially forested and existing roads and abandoned railroad grades will be used to access the drilling sites as well as serving as locations for the drilling sites.

The drilling contractor will use compact core drilling machines to fit the size constraints of the existing roads. It is not proposed to create new roads for accessing the drilling project. Also, each drill site is located on the existing road disturbances. No new disturbance is proposed.

The drill sites will each be approximately 25 feet wide by 50 feet long in size.

Site preparation would include stockpiling any topsoil material from the drill site area. Since the sites are located on existing disturbances, it is anticipated that no topsoil will be encountered. The site will be provided with grading and drainage control as described below.

EROSION AND SEDIMENT CONTROL – BEST MANAGEMENT PRACTICES : DRILL SITE DRAINAGE CONTROL

An 80 cubic foot capacity Sedimentation Sump will be excavated in soil. The sump will serve as sedimentation control for the drilling activity. All surface runoff occurring within the drilling site (25 feet by 50 feet size) will be directed into the sump. Also, surface runoff will be diverted away from the drillsite by the use of berms, silt fence, hay bale dikes and/or ditches. This activity will allow for a controlled work area for any surface runoff from the drillsite to be directed into sedimentation control before leaving the drillsite. See "Typical Site Plan" for conceptual detail.

A culvert is proposed at each drillsite. The culvert will allow the service trucks to reach the drill and not impact the diversion of surface runoff around the project site. The culverts will be removed at the time of the reclamation of the drillsite.

Each drillsite is approximately 1250 square feet and total disturbed area for the thirteen (13) sites will be 0.37 acres.

EROSION AND SEDIMENT CONTROL – BEST MANAGEMENT PRACTICES : ACCESS ROAD DRAINAGE CONTROL

The access roads are existing disturbances and have previously been used for exploration, mining and logging. It is not proposed to create any new roads, but to utilize the existing roads for access.

Any of the following methods or a combination of methods are proposed to minimize the sedimentation load on access roads allow drainage to continue to cross the existing roads and to minimize the sedimentation load:

- Use the existing road surface where the existing road conditions would not create a sediment load from vehicular traffic; or,
- Install culverts to minimize the sedimentation load that may occur with vehicular traffic; or,
- Install temporary timber mats to isolate the vehicular traffic from the drainage; or,
- Construct a rock cobble road that allows the drainage to flow beneath the traffic level. A course of crushed rock is placed over clean cobbles to form a running surface.

The road identified as Access Road No. 1 on the attached map is used for logging and has been based with aggregate. Since the road is in a condition that disturbance is not necessary, the acreage has not been included within the disturbed area calculation. Access Road No. 1 has been used for highway trucks to take the harvested timber to market. The road is located near the top of the ridge and minimal drainage activity is needed to maintain this road. The drillsite for Coreholes 608-2, 646-3, 674-2 and 706-1 are located on this road. Access Road No. 1 may also be used for logging activity during the time frame of the drilling project. This road is approximately 20,000 feet long.

Access Road No. 2 runs from Access Road No. 1 to Site 566-1. One section of road will require some grading to direct surface runoff away from the roadbed. Also, one area may require the use of temporary timber mats to cross a small drainage. Access Road No. 2 is approximately 2,000 feet long and has been used for logging in the past.

The road identified as Access Road No. 3 is a former railroad grade that had serviced the Tyler's Fork Mine in the 1880's. It has been used for commercial logging in the past. Any of the methods listed above may be used to allow drainage to cross the road with minimal impact from vehicular traffic. Access Road No. 3 is approximately 11,000 feet long. Coreholes 706-1, 726-1, 148R and 746-1 are located on Access Road No. 3.

Access Road No. 4 is a logging road that reaches the locations of Coreholes 608-1, 646-1 and 674-1. Any of the methods listed above may be used to allow drainage to cross the road with minimal impact from vehicular traffic. Access Road No. 4 is approximately 9,000 feet long.

Access Road No. 5 is a logging road that reaches the locations of Corehole 646-2. Any of the methods listed above may be used to allow drainage to cross the road with minimal impact from vehicular traffic. Access Road No. 5 is approximately 2,200 feet long.

NR 216.46(6)a – ***Description of any interim and permanent stabilization practices, including a schedule for implementing the practices. The erosion control plan shall ensure that existing vegetation is preserved where attainable and that disturbed portions of the construction site are stabilized.***

RESPONSE: The drilling project will construct drainage control on existing roads as described above. No slope stability issues are anticipated since the activities are isolated to existing disturbed areas. The disturbed portions of the construction site will be revegetated once activity has been completed.

NR 216.46(6)b – ***Description of any structural practices to divert flow away from exposed soils, store flows or otherwise limit runoff and the discharge of pollutants from the construction site. Unless specifically approved in writing, structural measures shall be installed in upland soils.***

RESPONSE: The drillsite will be provided with surface runoff diversions in the form of diversion ditches, earthen berms, hay bale dikes or silt fence to minimize the runoff from the disturbed area.

NR216.46(6)c – ***Management of overland flow at all areas of the construction site, unless otherwise controlled by outfall controls.***

RESPONSE: Access Roads will maintain existing drainage patterns. Drillsites will provide diversions around the site and drainage control for the drillsite proper.

NR216.46(6)d – ***Trapping of sediment in channelized flow.***

RESPONSE: The drillsites will be provided with sumps to minimize sedimentation from the activity.

NR216.46(6)e – ***Staging land disturbing construction activities to limit exposed soil areas subject to erosion.***

RESPONSE: Not Applicable. All activity is located on existing roads.

NR216.46(6)f – ***Protection of downslope drainage inlets where they occur.***

RESPONSE: Not Applicable, no downslope drainage inlets have been identified.

NR216.46(6)g – *Minimization of tracking at all vehicle and equipment entry and exit locations of the construction site.*

RESPONSE: The project entrances are located on Lake Drive in Ashland County and Moores Park Road in Iron County. Both of these public roads are unpaved. So any entry and exit is from an unpaved road to an unpaved road.

NR216.46(6)h – *Clean up of off-site sediment deposits.*

RESPONSE: Off-site sediment deposits are not anticipated. If a sediment deposit is identified, it will be removed and the site will be stabilized and seeded.

NR216.46(6)i – *Proper disposal of building and waste material.*

RESPONSE: No structures are proposed. Therefore, no building materials will be brought to the site. Any waste material generated will be removed from the site and disposed of in regulated disposal facilities.

NR216.46(6)j – *Stabilization of drainage ways.*

RESPONSE: Drainage ways are not anticipated to be impacted by this activity.

NR 216.46(6)k – *Installation of permanent stabilization practices as soon as possible after final grading.*

RESPONSE: The proposed disturbances are on existing roads. The disturbances will be stabilized after final grading.

NR216.46(6)l – *Minimization of dust to the maximum extent practicable.*

RESPONSE: Since the drillsite activity is based on a drill equipped with a water system, dust generation is not anticipated. Access roads will have vehicular traffic activity that will be limited to a minimal number of trips by drilling crews.

Post Construction Activity will consist of removing the drainage sump, road culverts and surface runoff diversions. Since all activity is confined on existing roads, each site will be returned to its use as a road with no increase in exposed parking lots or roads.

State of Wisconsin
Department of Natural Resources
dnr.wi.gov

Attachment – Construction Erosion and Sediment Control

(R08/09)

This Attachment is to be used in conjunction with the **Water Resources Application for Project Permits** (Form 3500-053) and will not be accepted if submitted separately. Use this form when there is land-disturbing activity of one acre or more or work in a waterway or wetland and the project is required to have an erosion and sediment control plan.

Project Characteristics

Project Name: GTac Exploration No.1 | County: ASHLAND & IRON

Type of Development Project

☐ Residential ☒ Commercial/Industrial ☐ Transportation ☐ Utility ☐ Agriculture

Total Area of Construction Site (acres): 0.23 | Total Estimated Disturbed area (acres): 7.80

Persons or Entities Involved

Entity or person responsible for installation and maintenance of the erosion and sediment control practices

Name (Organization or Entity)	Contact Person	Title	
GOGEBIC TACONITE, LLC	TIMOTHY J. MYERS	ENGINEER	
Mailing Address	**City**	**State**	**Postal Code**
402 SILVER STREET	Hurley	WI	54534
E-mail address	**Telephone Number (include area code)**	**Fax Number (include area code)**	
tmyers@gogebictaconite.com	(715) 561-2601	(715) 561-2604	

Name of local agencies with authority to review the project.

Description of Construction Activity

Describe the construction activity. Include a description of the site, nature of construction activity, sequence of work, and proposed structural and soil stabilization best management practices (BMPs).

SEE ATTACHMENT

Predominant Soil Types (list surface and subsurface soils)

SILT LOAM, 6-18% slopes

Erosion and Sediment Control Plan

Plan and Implementation Requirements	Yes	No	NA	Explanation for No (identify any exemptions)	Plan Sheet Location (page #)
1. Site map is prepared in accordance with s. NR 216.46(5), Wis. Adm. Code.	☒	☐	☐		
2. Erosion and sediment control best management practices plan is prepared in accordance with s. NR 216.46(6), Wis. Adm. Code.	☒	☐	☐		
3. Compliance with mandatory controls:					
a. Design meets the 80% reduction of sediment goal.	☐	☐	☒	Drill sites are 25' x 50'. Existing Access roads.	
b. Inlet protection is provided.	☐	☐	☒	Sheet Flow	
c. Dewatering plan is provided in the event that dewatering is needed.	☐	☐	☒	Sites are 25'x50' Access roads are existing	
d. Tracking control practices are located at entrances and exits.	☐	☒	☐	Access roads enter onto graveled public access	
e. Building and waste material is properly handled to prevent runoff of material into waters of the state.	☐	☐	☒	No building or waste materials	
f. BMPs are located prior to waters of the state, unless in-stream control is required*.	☒	☐	☐		

Project Name: GTac Exploration No. 1 County: Ashland & IRON

4. No solid material is discharged in violation of ch.30 or 31 Wis. Stats. or 33 USC 1344 permits.	☒	☐	☐		
5. Dissipation of velocity at outfalls to assure non-erosive flow is provided.	☒	☐	☐		
6. Inspection schedule and record keeping is in accordance with s. NR 216.46(9), Wis. Adm. Code.	☒	☐	☐		
7. A model was used to estimate compliance with the 80% sediment reduction and a summary of input and output and model version is attached.	☐	☒	☐	Until RUSLE 2 is available, the response is N/A for DNR submittals.	
8. The Erosion Control Plan has been submitted to and is in compliance with any requirements of local authorities.	☐	☐	☒	No known local authorization for stormwater	
9. This acknowledges that a copy of the Construction Site Erosion Control Plan has been prepared, will be kept on site, and made available upon request.	☒	☐	☐		

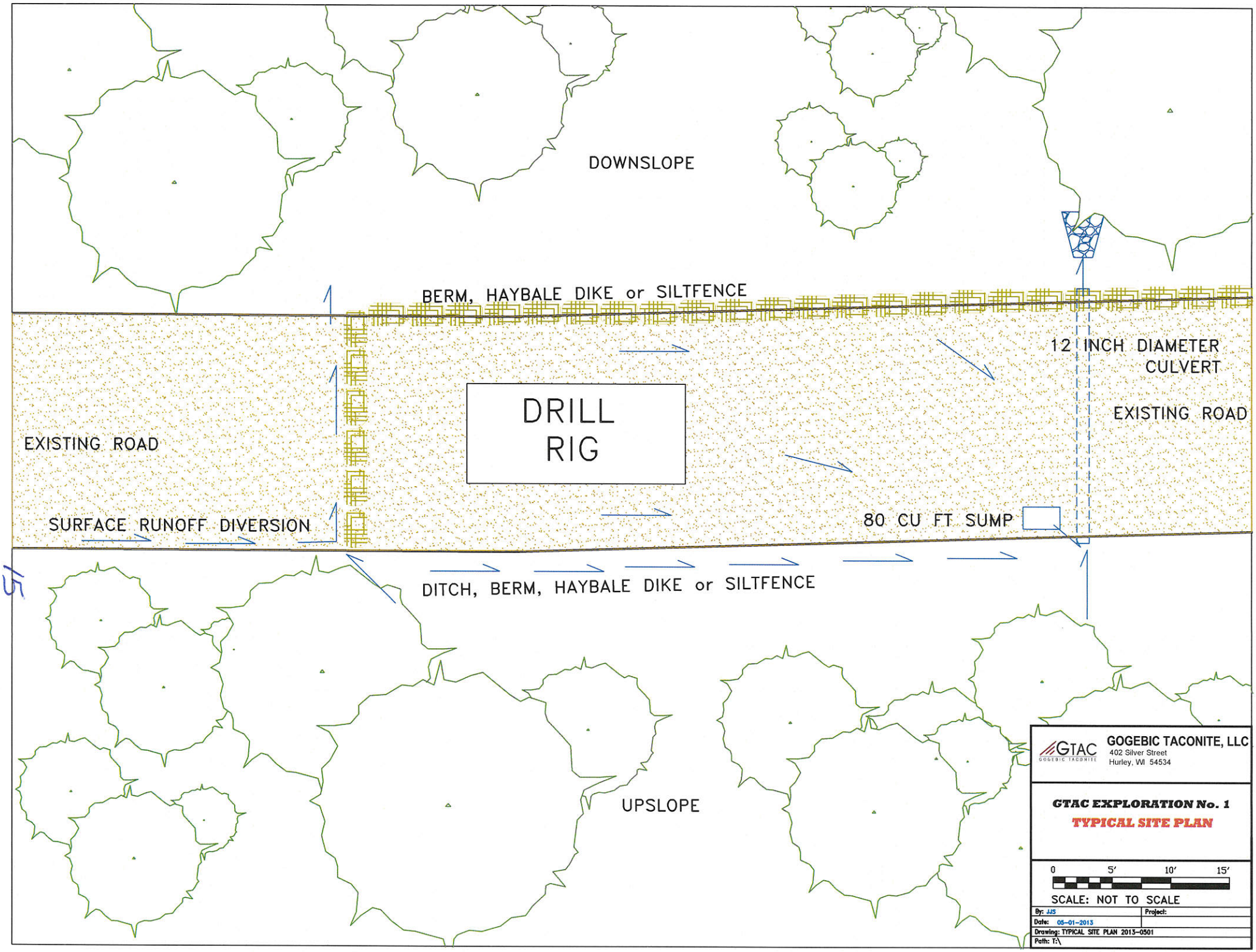
Technical Standards Employed (check all that apply) Website: http://dnr.wi.gov/runoff/stormwater/techstds.htm

Where the applicant specifies a technical standard, the applicant agrees to adhere to the criteria prescribed in the standard. Where a best management practice is proposed for which there is no technical standard or the technical standard is not used in whole, references on effectiveness in meeting the performance standard must be provided.

Erosion and Stabilization Practices:	Technical Standard #		Technical Standard #
☐ Channel Erosion Mat	1053	☐ Mulching For Construction Sites	1058
☒ Construction Site Diversion	1066	☐ Non-Channel Erosion Mat	1052
☐ Ditch Check	1062	☒ Seeding for Construction Site Erosion Control	1059
☐ Dust Control on Construction Sites	1068	☐ Stone Tracking Pad and Tire Washing	1057
☐ Land Application of Anionic Polyacrylamide	1050	☐ Temporary Grading Practices for Erosion Control	1067
		☐ Vegetative Buffer For Construction Sites	1054
Sediment Control Practices:			
☐ Dewatering	1061	☐ Silt Curtain*	1070
☒ Sediment Bale Barrier(Non-Channel)	1055	☒ Silt Fence	1056
☐ Sediment Basin	1064	☐ Storm Drain Inlet Protection For Construction Sites	1060
☐ Sediment Trap	1063	☐ Turbidity Barriers*	1069
		☐ Water Application of Polymers	1051

* BMPs that are in-stream controls.

Comments


DOWNSLOPE
BERM, HAYBALE DIKE or SILTFENCE
12 INCH DIAMETER CULVERT
EXISTING ROAD
DRILL RIG
EXISTING ROAD
SURFACE RUNOFF DIVERSION
80 CU FT SUMP
DITCH, BERM, HAYBALE DIKE or SILTFENCE
UPSLOPE
GTAC
GOGEBIC TACONITE, LLC
402 Silver Street
Hurley, WI 54534
GTAC EXPLORATION No. 1
TYPICAL SITE PLAN
0 5' 10' 15'
SCALE: NOT TO SCALE
By: JJS
Project:
Date: 05-01-2013
Drawing: TYPICAL SITE PLAN 2013-0501
Path: T:\

Sediment Bale Barrier
(Non-Channel)
(1055)

Wisconsin Department of Natural Resources
Conservation Practice Standard

I. Definition

A temporary sediment barrier consisting of a row of entrenched and anchored straw bales, hay bales or equivalent material used to intercept sediment-laden sheet flow from small drainage areas of disturbed soil.

II. Purpose

The purpose of this practice is to reduce slope length of the disturbed area and to intercept and retain transported sediment from disturbed areas.

III. Conditions Where Practice Applies

A. This standard applies to the following applications where:

1. Erosion occurs in the form of *sheet and rill erosion*[1]. There is no concentration of water flowing to the barrier (*channel erosion*).

2. Where adjacent areas need protection from sediment-laden runoff.

3. Effectiveness is required for less than 3 months.

4. Conditions allow for the bales to be properly entrenched and staked as outlined in the Criteria Section V.

B. Under no circumstance shall sediment bale barriers be used in the following applications:

1. Below the ordinary high watermark or placed perpendicular to flow in streams, swales, ditches or any place where flow is concentrated.

2. Where the maximum gradient upslope of the sediment bale barriers is greater than 50% (2:1).

IV. Federal, State, and Local Laws

Users of this standard shall be aware of applicable federal, state, and local laws, rules, regulations, or permit requirements governing the use and placement of the sediment bale barrier. This standard does not contain the text of federal, state, or local laws.

V. Criteria

This section establishes the minimum standards for design, installation and performance requirements.

A. Placement

1. At a minimum, sediment bale barriers shall be placed in a single row, lengthwise on the contour, with the ends of adjacent sediment bale barriers tightly abutting one another. The holes between bales shall be chinked (filled by wedging) with straw, hay or equivalent material to prevent water from escaping between the bales.

2. The maximum allowable slope lengths contributing runoff to a sediment bale barrier are specified in Table 1.

[1] Words in the standard that are shown in italics are described in IX. Definitions. The words are italicized the first time they are used in the text.

Table 1.	
Slope	Barrier Row Spacing
< 2%	100 feet
2 to 5%	75 feet
5 to 10%	50 feet
10 to 33%	25 feet
33 to 50%	20 feet
> 50%	Not Permitted

3. Sediment bale barriers shall not be placed perpendicular to the contour.

4. The end of the sediment bale barrier shall be extended upslope to prevent water from flowing around the barrier ends.

B. Height – Installed sediment bale barrier shall be a minimum of 10 inches high and shall not exceed a maximum height of 20 inches from ground level.

C. Anchoring and Support

1. The barrier shall be entrenched and backfilled. A trench shall be excavated the width of a sediment bale barrier and the length of the proposed barrier to a minimum depth of 4 inches. After bales are staked and chinked, the excavated soil shall be backfilled and compacted against the barrier. Backfill to ground level on the down slope side. On the upslope side of the sediment bale barrier backfill to 4 inches above ground level.

2. At least two wood stakes, "T" or "U" steel posts, or ½ inch rebar driven through at equidistance along the centerline of the barrier shall securely anchor each bale. The minimum cross sectional area for wood stakes shall be 2.0 by 2.0 inches nominal. The first stake in each bale shall be driven toward the previously laid bale to force the bales together. Stakes shall be driven a minimum 12-inches into the ground to securely anchor the sediment bale barriers.

3. Bales shall be installed so that bindings are oriented around the sides rather than along the tops and bottoms of the bales in order to prevent deterioration of the bindings.

VI. Considerations

A. Improper placement as well as improper installation and maintenance of sediment bale barriers will significantly decrease the effectiveness of this practice.

B. Sediment bale barriers should not be used upslope of the disturbed area.

C. A double row of sediment bale barriers may be installed in areas where additional protection is needed.

D. For safety, place all anchoring flush with the sediment bale barrier or cap any exposed anchoring device.

VII. Plans and Specifications

A. Plans and specifications for installing sediment bale barriers shall be in keeping with this standard and shall describe the requirements for applying the practice to achieve its intended purpose. The plans and specifications shall address the following:

1. Location of sediment bale barrier
2. Contributory drainage area
3. Schedules
4. Standard drawings and installation details
5. Restoration after removal

B. All plans, standard detail drawings, or specifications shall include schedule for installation, inspection, and maintenance. The responsible party shall be identified.

VIII. Operation and Maintenance

A. Sediment bale barriers shall, at a minimum, be inspected weekly and within 24 hours after every precipitation event that produces 0.5 inches of rain or more during a 24-hour period.

B. Damaged or decomposed sediment bale barriers, any undercutting, or flow channels

around the end of the sediment bale barriers shall be repaired.

C. Sediment shall be properly disposed of once the deposits reach 1/2 the height of the sediment bale barrier.

D. Sediment bale barriers and anchoring devices shall be removed and properly disposed of when they have served their usefulness, but not before the upslope areas have been permanently stabilized.

E. Any sediment deposits remaining in place after the sediment bale barrier is no longer required shall be dressed to conform to the existing grade, prepared and seeded.

IX. Definitions

Channel Erosion (III.A.1): The deepening and widening of a channel due to soil loss caused by flowing water. As rills become larger and flows begin to concentrate soil detachment occurs primarily as a result of shear. The transport capacity of the flow in a channel is based on the availability of sediment and is a monatomic function of velocity.

Sheet and Rill Erosion (III.A.1): Sheet and rill erosion is the removal of soil by the action of rainfall and shallow overland runoff. It is the first stage in water erosion. As flow becomes more concentrated rills occur. As soil detachment continues or flow increases, rills will become wider and deeper forming gullies.

Silt Fence
(1056)

Wisconsin Department of Natural Resources
Conservation Practice Standard

I. Definition

Silt fence is a temporary sediment barrier of entrenched permeable geotextile fabric designed to intercept and slow the flow of sediment-laden sheet flow runoff from small areas of disturbed soil.

II. Purpose

The purpose of this practice is to reduce slope length of the disturbed area and to intercept and retain transported sediment from disturbed areas.

III. Conditions Where Practice Applies

A. This standard applies to the following applications:

1. Erosion occurs in the form of *sheet and rill erosion*[1]. There is no concentration of water flowing to the barrier (*channel erosion*).

2. Where adjacent areas need protection from sediment-laden runoff.

3. Where effectiveness is required for one year or less.

4. Where conditions allow for silt fence to be properly entrenched and staked as outlined in the Criteria Section V.

B. Under no circumstance shall silt fence be used in the following applications:

1. Below the ordinary high watermark or placed perpendicular to flow in streams, swales, ditches or any place where flow is concentrated.

2. Where the maximum gradient upslope of the fence is greater than 50% (2:1).

IV. Federal, State, and Local Laws

Users of this standard shall be aware of applicable federal, state, and local laws, rules, regulations, or permit requirements governing the use and placement of silt fence. This standard does not contain the text of federal, state, or local laws.

V. Criteria

This section establishes the minimum standards for design, installation and performance requirements.

A. Placement

1. When installed as a stand-alone practice on a slope, silt fence shall be placed on the contour. The parallel spacing shall not exceed the maximum slope lengths for the appropriate slope as specified in Table 1.

Table 1.

Slope	Fence Spacing
< 2%	100 feet
2 to 5%	75 feet
5 to 10%	50 feet
10 to 33%	25 feet
> 33%	20 feet

2. Silt fences shall not be placed perpendicular to the contour.

3. The ends of the fence shall be extended upslope to prevent water from flowing around the ends of the fence.

B. Height – Installed silt fences shall be a minimum 14 inches high and shall not exceed 28 inches in height measured from the installed ground elevation.

[1] Words in the standard that are shown in italics are described in X. Definitions. The words are italicized the first time they are used in the text.

C. **Support** – Silt fences shall be supported by either steel or wood supports as specified below:

1. Wood supports

   a. The full height of the silt fence shall be supported by 1 1/8 inches by 1 1/8 inches air or kiln dried posts of hickory or oak.

   b. The silt fence fabric shall be stapled, using at least 0.5-inch staples, to the upslope side of the posts in at least 3 places.

   c. The posts shall be a minimum of 3 feet long for 24-inch silt fence and a minimum of 4 feet for 36-inch silt fence fabric.

2. Steel supports

   a. The full height of the silt fence shall be supported by steel posts at least 5 feet long with a strength of 1.33 pounds per foot and have projections for the attachment of fasteners.

   b. The silt fence fabric shall be attached in at least three places on the upslope side with 50 pound plastic tie straps or wire fasteners. To prevent damage to the fabric from fastener, the protruding ends shall be pointed away from the fabric.

3. The maximum spacing of posts for non-woven silt fence shall be 3 feet and for woven fabric 8 feet.

4. Silt fence shall have a support cord.

5. Where joints are necessary, each end of the fabric shall be securely fastened to a post. The posts shall then be wrapped around each other to produce a stable, secure joint or shall be overlapped the distance between two posts.

6. A minimum of 20 inches of the post shall extend into the ground after installation.

D. **Anchoring** – Silt fence shall be anchored by spreading at least 8 inches of the fabric in a 4 inch wide by 6 inch deep trench, or 6 inch deep V-trench on the upslope side of the fence. The trench shall be backfilled and compacted. Trenches shall not be excavated wider and deeper than necessary for proper installation.

On the terminal ends of silt fence the fabric shall be wrapped around the post such that the staples are not visible.

E. **Geotextile Fabric Specifications** – The geotextile fabric consists of either woven or non-woven polyester, polypropylene, stabilized nylon, polyethylene, or polyvinylidene chloride. Non-woven fabric may be needle punched, heat bonded, resin bonded, or combinations thereof. All fabric shall meet the following requirements as specified in Table 2.

Table 2.

Test Requirement	Method	Value[1]
Minimum grab tensile strength in the machine direction	ASTM D 4632	120 lbs. (550 N)
Minimum grab tensile strength in the cross machine direction	ASTM D 4632	100 lbs. (450 N)
Maximum apparent opening size equivalent standard sieve	ASTM D 4751	No. 30 (600 µm)
Minimum permittivity	ASTM D 4491	0.05 sec^{-1}
Minimum ultraviolet stability percent of strength retained after 500 hours of exposure	ASTM D 4355	70%

(WisDOT Standard Specifications for Road and Bridge Construction, 2001)

[1] All numerical values represent minimum / maximum average roll values. (For example, the average minimum test results on any roll in a lot should meet or exceed the minimum specified values.)

Silt fence shall have a maximum flow rate of 10-gallons/minute/square foot at 50mm constant head as determined by multiplying permittivity in 1/second as determined by ASTM D-4491 by a conversion factor of 74.

F. **Removal** – Silt fences shall be removed once the disturbed area is permanently stabilized and no longer susceptible to erosion.

VI. Considerations

A. Improper placement as well as improper installation and maintenance of silt fences will significantly decrease the effectiveness of this practice.

Silt fences should be considered for trapping sediment where sheet and rill erosion may be expected to occur in small drainage areas. Silt fences should not be placed in areas of concentrated flow.

B. Silt fences should be installed prior to disturbing the upslope area.

C. Silt fences should not be used to define the boundaries of the entire project. Silt fence should be placed only in areas where it is applicable due to its cost and the fact that it is not biodegradable. For example, silt fence should not be placed in locations where the natural overland flow is from an undisturbed area into disturbed areas of the project. It should also not be used as a diversion.

D. Silt fence should not be used in areas where the silt fence is at a higher elevation than the disturbed area.

E. When placing silt fence near trees, care should be taken to minimize damage to the root system. Avoid compaction and root cutting within 1.5 feet multiplied by the inch diameter of the tree (for example: for 10-inch trees keep out a 15-foot radius from the trunk). Refer to UWEX publication Preserving Trees During Construction for more information.

F. To protect silt fence from damage in areas of active construction or heavy traffic, silt fence should be flagged, marked, or highlighted to improve visibility.

G. Silt fence effectiveness is generally increased when used in conjunction with other upslope erosion control practices. To further strengthen the silt fence, straw / hay bales can be placed on the down slope side.

H. To help ensure effectiveness, silt fence should be inspected and repaired as necessary prior to forecasted rain events.

I. Where installation with wood posts is difficult, such as when hard or frozen ground is encountered, the use of steel post is recommended.

J. Silt fence can be mechanically installed with a plow type device provided that the silt fence is trenched in a manner such that equivalent performance is achieved to that specified in Section V.D.

VII. Plans and Specifications

A. Plans and specifications for installing silt fence shall be in keeping with this standard and shall describe the requirements for applying the practice to achieve its intended purpose. The plans and specifications shall address the following:

1. Location of silt fence
2. Contributory drainage area
3. Schedules
4. Material specification conforming to standard
5. Standard drawings and installation details
6. Restoration after removal

B. All plans, standard detail drawings, or specifications shall include schedule for installation, inspection, and maintenance. The responsible party shall be identified.

VIII. Operation and Maintenance

A. Silt fences shall at a minimum be inspected weekly and within 24 hours after every precipitation event that produces 0.5 inches of rain or more during a 24 hour period.

B. Damaged or decomposed fences, undercutting, or flow channels around the end of barriers shall be repaired or corrected.

C. Sediment shall be properly disposed of once the deposits reach ½ the height of the fence.

IX. References

UWEX Publication A0327 "Preserving Trees During Construction"

X. Definitions

Channel Erosion (III.A.1): The deepening and widening of a channel due to soil loss caused by flowing water. As rills become larger and flows begin to concentrate, soil detachment occurs primarily as a result of shear.

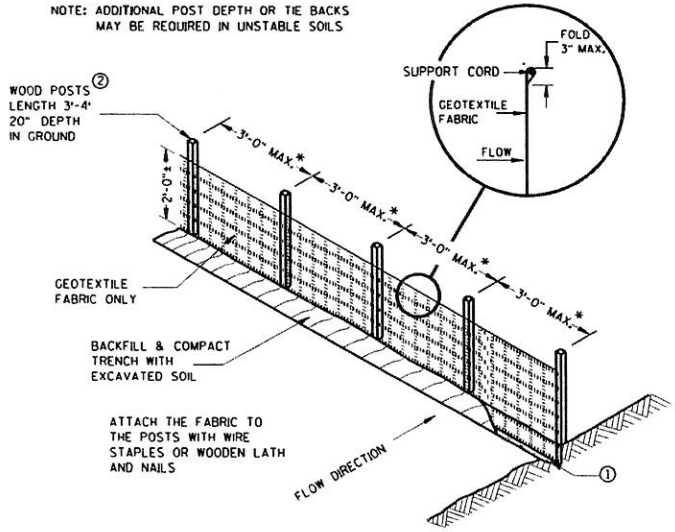
Sheet and Rill Erosion (III.A.1): Sheet and rill erosion is the removal of soil by the action of rainfall and shallow overland runoff. It is the first stage in water erosion. As flow becomes more concentrated rills occur. As soil detachment continues or flow increases, rills will become wider and deeper forming gullies.

GENERAL NOTES

① TRENCH SHALL BE A MINIMUM OF 4" WIDE & 6" DEEP TO BURY AND ANCHOR THE GEOTEXTILE FABRIC. FOLD MATERIAL TO FIT TRENCH AND BACKFILL & COMPACT TRENCH WITH EXCAVATED SOIL.

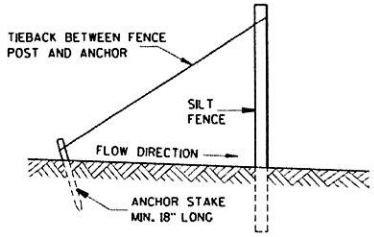
② WOOD POSTS SHALL BE A MINIMUM SIZE OF 1⅛" X 1⅛" OF OAK OR HICKORY.

③ CONSTRUCT SILT FENCE FROM A CONTINUOUS ROLL IF POSSIBLE BY CUTTING LENGTHS TO AVOID JOINTS. IF A JOINT IS NECESSARY USE ONE OF THE FOLLOWING TWO METHODS: A) TWIST METHOD -- OVERLAP THE END POSTS AND TWIST, OR ROTATE, AT LEAST 180 DEGREES, B) HOOK METHOD -- HOOK THE END OF EACH SILT FENCE LENGTH.

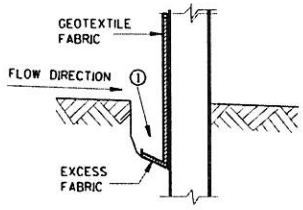


*NOTE: 8'-0" POST SPACING ALLOWED IF A WOVEN GEOTEXTILE FABRIC IS USED.

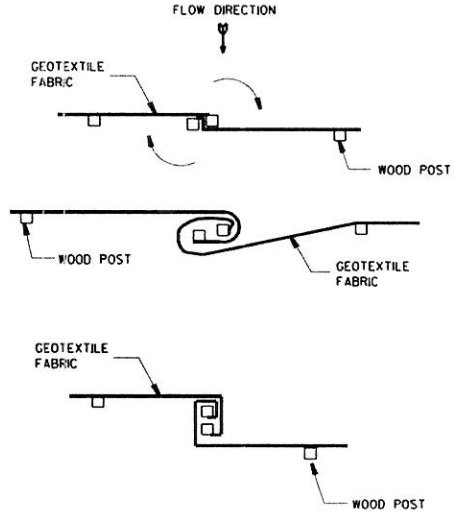
SILT FENCE



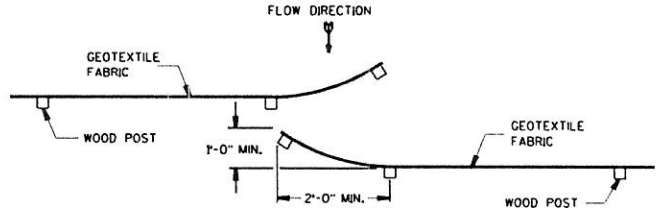
SILT FENCE TIE BACK
(WHEN ADDITIONAL SUPPORT REQUIRED)



TRENCH DETAIL



TWIST METHOD



HOOK METHOD
JOINING TWO LENGTHS OF SILT FENCE ④

23

This drawing based on Wisconsin Department of Transportation Standard Detail Drawing 8 E 9-6.

SILT FENCE

Seeding For Construction Site Erosion Control
(1059)

Wisconsin Department of Natural Resources
Conservation Practice Standard

I. Definition

Planting seed to establish temporary or permanent vegetation for erosion control.

II. Purpose

The purpose of *temporary seeding*[1] is to reduce runoff and erosion until permanent vegetation or other erosion control practices can be established. The purpose of *permanent seeding* is to permanently stabilize areas of exposed soil.

III. Conditions Where Practice Applies

This practice applies to areas of exposed soil where the establishment of vegetation is desired. Temporary seeding applies to disturbed areas that will not be brought to final grade or on which land-disturbing activities will not be performed for a period greater than 30 days, and requires vegetative cover for less than one year. Permanent seeding applies to areas where perennial vegetative cover is needed.

IV. Federal, State and Local Laws

Users of this standard shall be aware of all applicable federal, state and local laws, rules, regulations or permit requirements governing seeding. This standard does not contain the text of federal, state or local laws.

V. Criteria

This section establishes the minimum standards for design, installation and performance requirements.

A. Site and Seedbed Preparation

Site preparation activities shall include:

1. Temporary Seeding

   a. Temporary seeding requires a seedbed of loose soil to a minimum depth of 2 inches.

   b. Fertilizer application is not generally required for temporary seeding. However, any application of fertilizer or lime shall be based on soil testing results.

   c. The soil shall have a pH range of 5.5 to 8.0.

2. Permanent Seeding

   a. *Topsoil* installation shall be completed prior to permanent seeding.

   b. Permanent seeding requires a seedbed of loose topsoil to a minimum depth of 4 inches with the ability to support a *dense* vegetative cover.

   c. Application rates of fertilizer or lime shall be based on soil testing results.

   d. Prepare a tilled, fine, but firm seedbed. Remove rocks, twigs foreign material and clods over two inches that cannot be broken down.

   e. The soil shall have a pH range of 5.5 to 8.0.

[1] Words in the standard that are shown in italics are described in X. Definitions. The words are italicized the first time they are used in the text.

B. Seeding

1. Seed Selection

   a. Seed mixtures that will produce dense vegetation shall be selected based on soil and site conditions and intended final use. Section IX References, lists sources containing suggested seed mixtures.

   b. All seed shall conform to the requirements of the Wisconsin Statutes and of the Administrative Code Chapter ATCP 20.01 regarding noxious weed seed content and labeling.

   c. Seed mixtures that contain potentially invasive species or species that may be harmful to native plant communities shall be avoided.

   d. Seed shall not be used later than one year after the test date that appears on the label.

   e. Seed shall be tested for purity, germination and noxious weed seed content and shall meet the minimum purity and germination requirements as prescribed in the current edition of Rules for Testing Seed, published by the Association of Official Seed Analysts.

2. Seed Rates

   a. Temporary Seeding (Cover Crop)

      Areas needing protection during periods when permanent seeding is not applied shall be seeded with annual species for temporary protection. See Table 1 for seeding rates of commonly used species. The residue from this crop may either be incorporated into the soil during seedbed preparation at the next permanent seeding period or left on the soil surface and the planting made as a no-till seeding.

Table 1 Temporary Seeding Species and Rates

Species	Lbs/Acre	Percent Purity
Oats	131[1]	98
Cereal Rye	131[2]	97
Winter wheat	131[2]	95
Annual Ryegrass	80[2]	97

[1] Spring and summer seeding
[2] Fall seeding

   b. Permanent Seeding

      Rates shall be based on pounds or ounces of Pure Live Seed (PLS) per acre. Section IX contains some possible reference documents that provide seeding rates. Permanent seeding rates may be increased above the minimum rates shown in the reference documents to address land use and environmental conditions.

      If a *nurse crop* is used in conjunction with permanent seeding, the nurse crop shall not hinder establishment of the permanent vegetation.

      A nurse crop shall be applied at 50% its temporary seeding rate when applied with permanent seed.

3. Inoculation

   Legume seed shall be inoculated in accordance with the manufacturer's recommendations. Inoculants shall not be mixed with liquid fertilizer.

4. Sowing

   Seed grasses and legumes no more than ¼ inch deep. Distribute seed uniformly. Mixtures with low seeding rates require special care in sowing to achieve proper seed distribution.

   Seed may be broadcast, drilled, or hydroseeded as appropriate for the site.

   Seed when soil temperatures remain consistently above 53° F. *Dormant seed* when the soil temperature is consistently below 53° F (typically

Nov. 1st until snow cover). Seed shall not be applied on top of snow.

VI. Considerations

A. Consider seeding at a lower rate and making two passes to ensure adequate coverage.

B. Compacted soil areas may need special site preparation prior to seeding to mitigate compaction. This may be accomplished by chisel plowing to a depth of 12 inches along the contour after heavy equipment has left the site.

C. Sod may be considered where adequate watering is available.

D. When working in riparian areas refer to the NRCS Engineering Field Handbook, Chapter 16, Streambank and Shoreline Protection and Chapter 18, *Soil Bioengineering* for Upland Slope Protection and Erosion Reduction.

E. A site assessment should be conducted to evaluate soil characteristics, topography, exposure to sunlight, proximity to natural plant communities, proximity to nuisance, noxious and/or invasive species, site history, moisture regime, climatic patterns, soil fertility, and previous herbicide applications.

F. Use *introduced species* only in places where they will not spread into existing natural areas.

G. Lightly roll or compact the area using suitable equipment when the seedbed is judged to be too loose, or if the seedbed contains clods that might reduce seed germination.

H. See Section IX. References for suggested seed mixes (NRCS, WisDOT, UWEX) or use their equivalent.

I. Turf seedlings should not be mowed until the stand is at least 6 inches tall. Do not mow closer than 3 inches during the first year of establishment.

J. Seeding should not be done when the soil is too wet.

K. Consider watering to help establish the seed. Water application rates shall be controlled to prevent runoff and erosion.

L. Prairie plants may not effectively provide erosion control during their establishment period without a nurse crop.

M. Topsoil originating from agricultural fields may contain residual chemicals. The seedbed should be free of residual herbicide or other contaminants that will prevent establishment and maintenance of vegetation. Testing for soil contaminants may be appropriate if there is doubt concerning the soil's quality.

N. Consider using mulch or a nurse crop if selected species are not intended for quick germination. When mulching refer to WDNR Conservation Practice Standard Mulching for Construction Sites (1058).

VII. Plans and Specifications

Plans and specifications for seeding shall be in keeping with this standard and shall describe the requirements for applying this practice.

All plans, standard detail drawings, or specifications shall include schedule for installation, inspection, and maintenance. The responsible party shall be identified.

VIII. Operation and Maintenance

A. During construction areas that have been seeded shall at a minimum be inspected weekly and within 24 hours after every precipitation event that produces 0.5 inches of rain or more during a 24-hour period. Inspect weekly during the growing season until vegetation is densely established or permit expires. Repair and reseed areas that have erosion damage as necessary.

B. Limit vehicle traffic and other forms of compaction in areas that are seeded.

C. A fertilizer program should begin with a soil test. Soil tests provide specific fertilizer recommendations for the site and can help to avoid over-application of fertilizers.

IX. References

A. Seed Selection References

United States Department of Agriculture – Natural Resource Conservation Service Field Office Technical Guide Section IV, Standard 342, Critical Area Planting.

UWEX Publication A3434 Lawn and Establishment & Renovation.

WisDOT, 2003. State of Wisconsin Standard Specifications For Highway and Structure Construction. Section 630, Seeding.

B. General References

Association of Official Seed Analysts, 2003. Rules for Testing Seed. http://www.aosaseed.com.

Metropolitan Council, 2003. Urban Small Sites Best Management Practice Manual, Chapter 3, Vegetative Methods 3-85 – 3-91. Minneapolis.

The State of Wisconsin list of noxious weeds can be found in Statute 66.0407.

United States Department of Agriculture – Natural Resources Conservation Service. Engineering Field Handbook, Chapters 16 and 18.

UWEX Publication GWQ002 Lawn & Garden Fertilizers.

X. Definitions

Dense (V.A.2.b) A stand of 3-inch high grassy vegetation that uniformly covers at least 70% of a representative 1 square yard plot.

Dormant seed (V.B.4): Seed is applied after climatic conditions prevent germination until the following spring.

Introduced Species (VI.F) Plant species that historically would not have been found in North America until they were brought here by travelers from other parts of the world. This would include smooth bromegrass and alfalfa. Some of these species may have a wide distribution such as Kentucky bluegrass.

Nurse Crop (V.B.2.b): Also known as a companion crop; is the application of temporary (annual) seed with permanent seed.

Permanent seeding (II) Seeding designed to minimize erosion for an indefinite period after land disturbing construction activities have ceased on the site.
Soil Bioengineering (VI.D) Practice of combining mechanical, biological and ecological concepts to arrest and prevent shallow slope failures and erosion.

Temporary Seeding (II) Seeding designed to control erosion for a time period of one year or less that is generally removed in order to perform further construction activities or to permanently stabilize a construction site.

Topsoil (V.A.2.a) Consists of loam, sandy loam, silt loam, silty clay or clay loam humus-bearing soils adapted to sustain plant life with a pH range of 5.5 – 8.0. Manufactured topsoil shall through the addition of sand or organic humus material, peat, manure or compost meet the above criteria.

Construction Site Diversion
(1066)

Wisconsin Department of Natural Resources
Conservation Practice Standard

I. Definition

A *temporary*[1] berm or channel constructed across a slope to collect and divert runoff.

II. Purpose

To intercept, divert, and safely convey runoff at construction sites in order to divert clean water away from disturbed areas, or redirect sediment laden waters to an appropriate sediment control facility.

III. Conditions Where Practice Applies

A. This practice is applicable to construction sites where temporary surface water runoff control or management is needed. Locations and conditions include:

1. Above disturbed areas, to limit runoff onto the site.
2. Across slopes to reduce slope length.
3. Below slopes to divert excess runoff to stabilized outlets.
4. To divert sediment-laden water to sediment control facilities.
5. At or near the perimeter of the construction area to keep sediment from leaving the site.

B. This standard does not pertain to permanent diversions. Refer to appropriate design criteria and local regulations when designing permanent diversions.

IV. Federal, State, and Local Laws

Users of this standard shall be aware of applicable federal, state, and local laws, rules, regulations, or permit requirements governing the use and placement of this practice. This standard does not contain the text of federal, state, or local laws.

V. Criteria

A. The diversion shall have stable side slopes and shall not be overtopped during a 2-year frequency, 24-hour duration storm. The minimum berm cross section shall be as follows:

1. Side slopes of 2:1 (horizontal:vertical) or flatter.
2. Top width of two feet.
3. Berm height of 1.5 feet.

B. Sediment-laden runoff from disturbed areas shall be diverted into a sediment control practice. For typical sediment control practices see WDNR Conservation Practice Standards Sediment Trap (1063) or Sediment Basin (1065) for design criteria.

C. When diverting clean water the diversion channel and its outfall shall be immediately *stabilized* for the 2-year frequency, 24-hour duration storm. Build and stabilize clean water diversions before initiating down slope land-disturbing activities.

D. Diversions shall be protected from damage by construction activities. At all points where diversion berms or channels will be crossed by construction equipment, the diversion shall be stabilized or shaped appropriately. Temporary culverts of adequate capacity may be used.

E. For diversions that are to serve longer than 30 days, the side slopes including the ridge, and down slope side the diversion shall be stabilized as soon as they are constructed. The diversion channel should be stabilized (i.e. erosion mat) or a larger sediment control practice shall be needed. For diversions serving less than 30 days, the

[1] Words in the standard that are shown in italics are described in IX. Definitions. The words are italicized the first time they are used in the text. Definitions apply to concepts found in this document and may not apply in other situations.

down slope side of the diversion shall be stabilized as soon as constructed.

VI. Considerations

A. The channel cross section may be parabolic, v-shaped or trapezoidal. The use of "V" channels is generally discouraged due to potential erosion problems.

B. Ditch checks may be used to enhance sediment removal. Ditch checks shall be designed in accordance with WDNR Conservation Practice Standard Ditch Check (1062).

C. For diversion berms consider designing an emergency overflow section or bypass area to limit damage from storms that exceed the 2-year frequency 24-hour duration storm. The overflow section may be designed as a stabilized weir with riprap protection.

VII. Plans and Specifications

A. Plans and specifications for installing diversions shall be in keeping with this standard and shall describe the requirements for applying the practice to achieve its intended purpose. The plans and specifications shall address the following:

1. Diversion location.
2. Channel grade or elevations.
3. Typical cross section.
4. Channel stabilization if required.

B. All plans, standard detail drawings, or specifications shall include schedule for installation, inspection, and maintenance. The responsible party shall be identified.

VIII. Operation and Maintenance

A. Diversions shall, at a minimum, be inspected weekly and within 24 hours after every precipitation event that produces 0.5 inches of rain or more during a 24-hour period.

B. Maintenance shall be completed as soon as possible with consideration to site conditions.

C. Accumulated sediment shall be removed when it reaches one half the height of the diversion berm. Properly dispose of any sediment removed from the diversion.

D. Diversions shall be removed and the area stabilized according to construction plans.

IX. Definitions

Temporary (I): an erosion control measure that is utilized during construction and grading operations prior to final stabilization.

Stabilized (V.C): means protecting exposed soil from erosion.

State of Wisconsin
Department of Natural Resources
dnr.wi.gov

Attachment – Post-Construction Storm Water Management

(R08/09)

This Attachment is to be used in conjunction with the **Water Resources Application for Project Permits** (Form 3500-053) and will not be accepted if submitted separately. Use this form when there is land disturbing activity of one acre or more and the project is required to have a post-construction storm water management plan under ch. NR 216, Wis. Adm. Code. This form is **not** required for work in a waterway or wetland.

Type of Development Project

☐ In-fill ☒ Redevelopment ☐ New Development

Impervious Area (as a percent of total land disturbance): Before Construction: Ø % After Construction: Ø %

Predevelopment Runoff Curve Number: 70 | Post-Development Runoff Curve Number: 70

Persons or Entities Involved

Entity or person responsible for long-term operation and maintenance of the practices

Name (Organization or Entity)	Contact Person	Title	
GOGEBIC TACONITE, LLC	TIMOTHY J. MYERS	ENGINEER	
Mailing Address	**City**	**State**	**Postal Code**
402 SILVER STREET	Hurley	WI	54534
E-mail address	**Telephone Number (include area code)**	**Fax Number (include area code)**	
tmyers@gogebictaconite.com	(715) 561-2601	(715) 561-2604	

Description of Post-Construction Activity

Describe the post-construction activity. Include a description of the development site with any site limitations, proposed combination of structural best management practices (BMPs) to control pollutants, peak flow, volume and drainage areas to practices) POST CONSTRUCTION ACTIVITY WILL CONSIST of Removing the drainage sumps, culverts and surface runoff diversions. Since all activity is confined on existing roads, each site will be returned to its previous use as a road with no increase in exposed parking lots or roads.

Storm Water Management Plan

Plan and Implementation Requirements	Yes	No	NA	Explanation for No (ID exemptions / exclusions)	Plan Sheet Location (page #)
1. All BMPs will be installed by the time the construction site is considered stabilized.	☐	☐	☒		
2. BMPs are located on-site and prior to waters of the state.	☐	☐	☒		
3. If an off-site BMP is used, a letter of permission and details about the design of the practice **is attached**.	☐	☐	☒		
4. A long-term maintenance agreement **is attached.**	☐	☐	☒		
5. Infiltration BMPs and ponds are adequately separated from wells.					
a. 400 ft. from a community well and/or	☐	☐	☒		
b. In accordance with s. NR 812.08, Wis. Adm. Code. for non-community or private wells.	☐	☐	☒		
6. The site is required to meet the performance standards of s. NR 151.12 or 151.24, Wis. Adm. Code. (If the answer is no, explain why and skip questions 7-14) Note: A post-construction storm water management plan is still required.	☐	☐	☒		
7. The site meets the applicable TSS reduction goal of s. NR 151.12(5)(a) or 151.24(3), Wis. Adm. Code. TSS reduction is ____ %.	☐	☐	☒		
8. The site meets the applicable peak flow control goal of s. NR 151.12(5)(b) or 151.24(4), Wis. Adm. Code.	☐	☐	☒		

9. The site meets the applicable infiltration goal of s. NR 151.12(5)(c) or 151.24(5), Wis. Adm. Code. Design infiltration rate used is [ ] in/hr. Percent of pre-development infiltration volume infiltrated is [ ] %. Area dedicated to infiltration is [ ] % of the project area.	☐	☐	☒		
10. Pretreatment is provided before infiltration of runoff from parking lots or commercial, industrial, and institutional roads.	☐	☐	☒		
11. A summary of the results of the site evaluation, similar to Step D in Technical Standard 1002, **is attached**.	☐	☐	☒		
12. A protective area is established or maintained in accordance with s. NR 151.12(5)(d) or 151.24(6), Wis. Adm. Code. Minimum protective area width is [ ] ft.	☐	☐	☒		
13. For fueling and vehicle maintenance areas, the plan meets the no visible sheen goal of s. NR 151.12(5)(e) or 151.24(7), Wis. Adm. Code.	☐	☐	☒		
14. Modeling was used to estimate compliance with the TSS, peak flow, and/or infiltration requirements and a summary of input, output and model version **is attached**.	☐	☐	☒		
15. The Storm Water Management Plan has been submitted to and is in compliance with local requirements. Date of local compliance letter: [ ].	☐	☐	☒		
17. This acknowledges that a copy of the Storm Water Management Plan has been prepared, will be kept on site, and made available upon request.	☐	☐	☒		

Technical Standards Employed (check all that apply) Website: http://dnr.wi.gov/runoff/stormwater/techstds.htm

Where the applicant specifies a technical standard, the applicant agrees to adhere to the criteria prescribed in the standard. Where a best management practice is proposed for which there is no technical standard or the technical standard is not used in whole, references on effectiveness in meeting the performance standard must be provided.

TSS Reduction, Peak Flow Control, Infiltration Practices:	**Technical Standard # or other Reference**
☐ Bioretention for Infiltration	1004
☐ Compost	S100
☐ Infiltration Basin	1003
☐ Proprietary Storm Water Sedimentation Devices	1006
☐ Rain Gardens	DNR Publication PUB-WT-776
☐ Site Evaluation for Stormwater Infiltration	1002
☐ Vegetated Infiltration Swales	1005
☐ Wet Detention Pond	1001

Comments